

Cont'd
12 angle of reflection from said at least one grouped micro mirror of said second MEMS
13 device combine to produce an overall effective angle about said first axis for said group
14 which is greater than either the angle of reflection from said at least one grouped micro
15 mirror of said first MEMS device and the angle of reflection from said at least one
16 grouped micro mirror of said second MEMS device.

Unchanged claim 2

1 2. The invention as defined in claim 1 wherein said first number and said second
number are the same.

Unchanged claim 3

1 2. The invention as defined in claim 1 further comprising a plurality of optical
source coupled to supply input light to said first MEMS device.

Unchanged claim 4

1 2. The invention as defined in claim 1 further comprising a plurality of optical
source coupled to supply input light to said first MEMS device, wherein at least one of
3 said optical sources are one of the group consisting of an optical fiber, a laser, a light
4 emitting diode, light source, and a planar wave guide.

Unchanged claim 5

1 2. The invention as defined in claim 1 further comprising a receiver coupled to
receive output light from said second MEMS device.

Unchanged claim 6

1 2. The invention as defined in claim 1 further comprising a receiver coupled to
receive output light from said second MEMS device, each of said receiver being one of
3 the group consisting of an optical fiber, a photo detector, and a planar wave guide.

Unchanged claim 7

1 2. The invention as defined in claim 1 wherein said first imaging system
reproduces an angle of reflection of the light from each of said micro mirrors of said first
3 MEMS device

Unchanged claim 8

1 2. The invention as defined in claim 1 wherein said overall effective angle for said
group is a sum of said angle of reflection from each of said micro mirrors of said group.

✓ **Unchanged claim 9**

1 9. The invention as defined in claim 1 further comprising a field lens for receiving
2 light reflected by said second MEMS device.

✓ **Unchanged claim 10**

1 10. The invention as defined in claim 1 further comprising a field lens through
2 which light passes prior to being incident onto said first MEMS device.

✓ **Replacement claim 11**

1 11. An optical switch, comprising
2 a first micro-electro mechanical system (MEMS) device containing a first number
3 of micro mirrors;
4 a second micro-electromechanical system (MEMS) device containing a second
5 number of micro mirrors; and
6 a first imaging system optically coupled to said first MEMS device so as to
7 produce an image of each of said micro mirrors of said first MEMS device on a
8 corresponding micro mirror of said second MEMS device; and
9 a mirror for receiving light reflected by said second MEMS device and reflecting
10 said light back toward said second MEMS device;
11 whereby at least one of said micro mirrors of said first MEMS device is grouped
12 with at least one of said micro mirrors of said second MEMS device such that the angle of
13 reflection from said at least one grouped micro mirror of said first MEMS device and the
14 angle of reflection from said at least one grouped micro mirror of said second MEMS
15 device combine to produce an overall effective angle for said group.

✓ **Unchanged claim 12**

1 12. The invention as defined in claim 11 wherein said mirror is of a type selected
2 from the group of types consisting of: planar and curved.

✓ **Unchanged claim 13**

1 13. The invention as defined in claim 1 wherein said first number of micro mirrors
2 and said second number of micro mirrors are the same.

✓ **Unchanged claim 14**

1 14. The invention as defined in claim 1 wherein said first number of micro mirrors
2 and said second number of micro mirrors are different.

Cont'd
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Unchanged claim 15

1 15. The invention as defined in claim 1 wherein the size of said micro mirrors of
2 said first device is the same as the size of said micro mirrors of said second device.

Unchanged claim 16

1 16. The invention as defined in claim 1 wherein the size of said micro mirrors of
2 said first device is the same different than the size of said micro mirrors of said second
3 device.

A'
Unchanged claim 17

1 17. The invention as defined in claim 1 wherein said imaging system is a
2 telecentric system.

Unchanged claim 18

1 18. The invention as defined in claim 1 further comprising
2 a third micro-electromechanical system (MEMS) device containing a third number
3 of micro mirrors;
4 a fourth micro-electromechanical system (MEMS) device containing a fourth
5 number of micro mirrors; and
6 a second imaging system optically coupled to said third MEMS device so as to
7 produce an image of each of said micro mirrors of said third MEMS device on a
8 corresponding micro mirror of said fourth MEMS device;
9 whereby at least one of said micro mirrors of said third MEMS device is grouped
10 with at least one of said micro mirrors of said fourth MEMS device such that the angle of
11 reflection from said at least one grouped micro mirror of said third MEMS device and the
12 angle of reflection from said at least one grouped micro mirror of said fourth MEMS
13 device combine to produce an overall effective angle for said group of micro mirrors of
14 said third and fourth MEMS devices.

Cancelled 7
Unchanged claim 19

1 19. An optical switch, comprising
2 a first micro-electro mechanical system (MEMS) device containing a first number
3 of micro mirrors;
4 a second micro-electromechanical system (MEMS) device containing a second
5 number of micro mirrors;
6 a first imaging system optically coupled to said first MEMS device so as to
7 produce an image of each of said micro mirrors of said first MEMS device on a
8 corresponding micro mirror of said second MEMS device; and
9 a third micro-electromechanical system (MEMS) device containing a third number
10 of micro mirrors;
11 whereby at least one of said micro mirrors of said first MEMS device is grouped
12 with at least one of said micro mirrors of said second MEMS device such that the angle of
13 reflection from said at least one grouped micro mirror of said first MEMS device and the
14 angle of reflection from said at least one grouped micro mirror of said second MEMS
15 device combine to produce an overall effective angle for said group;
16 and wherein light reflected by said micro mirrors of said third MEMS device is
17 coupled to said first MEMS device.

Unchanged claim 20

1 20. The invention as defined in claim 1 further comprising:
2 a third micro-electromechanical system (MEMS) device containing a third number
3 of micro mirrors;
4 and wherein light reflected by said micro mirrors of said second MEMS device is
5 coupled to said third MEMS device.

Unchanged claim 21

1 21. The invention as defined in claim 1 wherein said micro mirrors of said first
2 MEMS device are adapted to tilt substantially only around a first tilt axis and said micro
3 mirrors of said second MEMS device are adapted to tilt substantially only around a second
4 tilt axis that is substantially orthogonal to said first tilt axis.

Amend B1
Unchanged claim 22

2 22. The invention as defined in claim 1 wherein said first MEMS device is
arranged to act as a booster.

cont'd *part B1*

Unchanged claim 23

1 23. The invention as defined in claim 1 wherein each of said grouped micro
2 mirrors effectively contribute different angles to said overall effective angle for said group.

Unchanged claim 24

1 24. The invention as defined in claim 1 wherein one of each of said grouped micro
2 mirrors effectuates coarse tilt and the other effectuates fine control.

Unchanged claim 25

1 25. The invention as defined in claim 1 wherein said micro mirrors of one of said
2 first and second MEMS devices is arranged so that they can be only flat or maximally
3 tilted in at least one direction around at least one tilt axis.

Unchanged claim 26

1 26. The invention as defined in claim 1 wherein said micro mirrors of one of said
2 first and second MEMS devices is arranged so that they can be only maximally tilted in at
3 least one direction around at least one tilt axis.

part B1

Replacement claim 27

1 27. A method for operating an optical switch including a first micro-
2 electromechanical system (MEMS) device containing a first number of micro mirrors
3 tiltable about at least a first axis, a second micro-electromechanical system (MEMS)
4 device containing a second number of micro mirrors tiltable about at least said first axis,
5 the method comprising the step of:

6 imaging said first optical MEMS device onto said second optical MEMS device so
7 that the angle of reflection from at least one micro mirror of said first optical MEMS
8 device and the angle of reflection from at least one micro mirror of said second MEMS
9 device combine to produce an overall effective angle about at least said first axis when
10 considering said least one micro mirror of said first optical MEMS device and said at least
11 one micro mirror of said second MEMS device as a group, said overall effective angle
12 being greater than either the angle of reflection from said at least one grouped micro
13 mirror of said first MEMS device and the angle of reflection from said at least one
14 grouped micro mirror of said second MEMS device.

Unchanged claim 28

1 28. The invention as defined in claim 27 further comprising the step of passing
2 light from said second optical MEMS device through a field lens.

Will help **Unchanged claim 29**

- 1 29. The invention as defined in claim 27 further comprising the step of receiving
- 2 light from a field lens at said first optical MEMS device.

Unchanged claim 30

- 1 30. The invention as defined in claim 27 further comprising the step of coupling
- 2 light passed from a fiber at said first optical MEMS device.

Unchanged claim 31

- 1 31. The invention as defined in claim 27 further comprising the step of coupling
- 2 light from said second optical MEMS device to a fiber.

A **Replacement claim 32**

- 1 32. An optical switch, comprising
- 2 a first micro reflective means mounted on a first micro-electromechanical system
- 3 (MEMS) means tiltable about at least a first axis;
- 4 a second micro reflective means mounted on a second micro-electromechanical
- 5 system (MEMS) means tiltable about at least said first axis;
- 6 a first imaging means optically arranged to produce an image of said first micro
- 7 reflective means at said second micro reflective means such that the angle of reflection of
- 8 said first micro reflective means and the angle of reflection from said second micro
- 9 reflective means combine about said first axis to produce an overall effective reflective
- 10 angle that is greater than either the angle of reflection of said first micro reflective means
- 11 and the angle of reflection from said at least second micro reflective means.